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blue-bottles. I cut an ounce of raw veal into dice, and dropped it in the bottom of the jar in a heap. He did not seem to see or smell it, but after a while happened to dive into it. He appeared to be full of joy at the discovery. One fragment after another he took in his hands, held it closely to his jaws, and sucked it dry by strong pulls. At each pull I could mark the receding red juice of the meat. When the veal was reduced to a pale fibre, he let it go and took a fresh bit. He always retired to the shelter of the paper to eat, with the sole exception of the mouthful he made of the mosquito. Like the King of Dahomey, he would not eat in public.

JULIA MCNAIR WRIGHT.

Fulton, Mo., Feb. 26.

### Cold and Warm Waves

THE observations taken at the meteorological establishment on the Eiffel Tower in Paris have led to several most interesting results; and among other things it has recently been found that the velocity of the air during an ordinary strong wind is about twice as high at the top of this tower as it is at its base. Such being the case, we should expect to find advancing cold or warm waves far ahead in upper regions of what they are closer to the earth's surface; and so they actually are found to be, as mentioned by Professor Hazen in your last issue, when he says that the temperature change at isolated mountain-peaks, as Mount Washington or Pike's Peak, occurs several hours earlier at their tops than at their bases, or when he says that high areas, etc., advance with a velocity double that of the surface air. These phenomena give us, therefore, a very instructive illustration or proof of the effect of the friction between the earth's surface and the air moving over it; and they confirm the old popular belief that weather-changes are brought about by the wind, or, what amounts to the same thing, that the advance of cold and warm waves is entirely due to mechanical action, or displacement of the surface-air as a body, in conformity to such rules as I have set forth in my paper, "On the Cause of Trade Winds" (*Transactions of the American Society of Civil Engineers*, vol. xxiii.), which paper also gives a very simple clew to the increased cold or heat in the border current of cold and warm waves.

Professor Hazen, however, does not appear to be acquainted with the important results of these observations at Paris, when he concludes that the changes in temperature and humidity of the air accompanying the advance of these waves cannot be due to the wind, or are entirely independent of the motion of a mass of air, although he curiously enough states at the same time that a rapid motion of an advancing wave has a tendency to increase the wind, which seems contradictory.

Starting from these false premises, no wonder our meteorologist arrives at some most startling results. He finds that the moisture of the air is "removed," "eliminated," or, as he says elsewhere, "sucked out" of the air in less than no time by some mysterious agency or another which cannot as yet be accounted for. Storms are transported or transferred through the air without the air-particles being moved at all. Indeed, when it is considered that the literal meaning of the word "storm" is "violent agitation or commotion," or, in other words, "wind," he wants to tell us that when a wind blows, the air-particles don't move at all: it is all deception, and the storm is due to electric energy or something else. The professor's mistaken notion here is, however, precisely similar to the one I pointed out in my last letter, when I tried to explain the fallacy of the result he arrived at,—that condensation did not always take place when saturated air "got chilled." His ideas of the principles of motion seem to differ remarkably from those engineers are accustomed to go by.

Finally, an entirely different subject is brought up by him, and treated in the same mysterious manner: "A portion of the heat in our storms is due to a peculiar condition of the atmosphere which intercepts the heat of the sun, and this heat gradually works down from the upper atmosphere to the earth." Mightn't it be simpler to say that when the sun is prevented from warming the earth's surface, its heat is taken up by the clouds, and consequently, when the cloud-carrying layers are brought near the earth's surface, as we know they are towards rain, this heat is felt by us?

Professor Hazen is a meteorologist without a theory; and, although it may be much easier to run down than to build up, no doubt he has done excellent service by constantly finding fault with others in just conformity to this negative standpoint; but, as the professor always seems so very anxious "to strike at the very heart of present theories of storm-generation," and this evidently in his strong point, I may recommend him to strike at the heart of a rain theory I some time ago had the honor of presenting to the American Society of Civil Engineers, and he may thereby possibly be able to prove that his notions of the principles of motion, etc., are more correct than those held and practised by the members of that distinguished body.

FRANZ A. VELSCHOW, C.E.

Brooklyn, N.Y., March 2.

### The Piney Branch Indian Workshop.

THE "Annual Report of the Curator of the Museum of Archaeology, Philadelphia" (Vol. i. No. 1) contains a criticism of recent work done, and conclusions drawn, by Mr. W. H. Holmes of the Bureau of Ethnology at the Piney Branch Workshop, near Washington, D.C., and of Mr. Holmes's papers thereon (*American Anthropologist* of January and July, 1890), that to the writer appears to do great injustice to Mr. Holmes.

In his report, Dr. Abbott, who has visited the site and obtained specimens therefrom through Mr. Holmes, says, "The enormous number of 'blocked out' implements have recently been held as conclusive evidence that such objects are to be considered as 'failures,' and, this being so, that similar objects found under any circumstances in this country are of like signification." To such conclusion the doctor dissents (p. 8).

Again he says, "While the position taken by Mr. Holmes and others as to the archaeological significance of the Piney Branch deposits may be wholly correct, and stand the test of every objection, the inferences drawn are too sweeping, and have not necessarily the bearing upon the question of man's antiquity in America which he practically claims. The conditions under which rude paleolithic implements occur in the valley of the Delaware are wholly different. Here they are characteristic of a horizon; are so associated with a well-marked deposit, that by no verbal jugglery can they be relegated to 'incongruous association,' and so are adventitious" (p. 9).

And concluding, the doctor says, "On the other hand, to accept Mr. Holmes's conclusion, that all rude implements, howsoever and wheresoever found, are Indian 'failures,' is not merely to remove from the class of implements the so-called 'turtle-backs' of the Delaware valley, but to remove the paleolithic implements of Europe, Asia, and Africa from the prehistoric archaeology of those continents."

Mr. Holmes is an officer of the Bureau of Ethnology, whose works on pottery, on the antiquities of the South-West, and on the Chiriquian objects, have familiarized his name to all students of American archaeology as a most painstaking and careful investigator; and, had he taken the ground asserted, he would have laid himself open to the charge of want of due care in conducting a scientific work.

Thus it will be observed that Dr. Abbott first says the Piney Branch objects "have recently been held as conclusive evidence that such objects are to be considered as failures," and dissents from such conclusion. Again he says, "Whilst the position taken by Mr. Holmes and others" may be correct as to Piney Branch, the conclusions are too sweeping, and have not the bearing which he (Mr. Holmes) practically claims. And in conclusion, Dr. Abbott, while claiming that the discovery of paleolithic implements of the Delaware valley occurred under different conditions from those under which the implements at Piney Branch were found, says the Delaware valley implements "by no verbal jugglery can be relegated to 'incongruous associations.'" The report starts by saying that the Piney Branch objects "have been held," and, later on, by "Mr. Holmes and others." In the last part of the latter sentence in which "Mr. Holmes and others" occurs, the doctor, in specifying Mr. Holmes individually, saddles the latter with conclusions which began with "have been held," and then defends the paleoliths of the Delaware from being by "verbal